



the RAD WASTE NEWS

Army Corps of engineers addresses fusr ap issues By julie peterson

Note: The following article is provided to give the reader the view of the U.S. Army Corps of Engineers position on the disposal of FUSRAP waste from Tonawanda, NY. I feel that too often both sides of the story do not get told and members of the industry and the public need the story behind the sensational headlines. If you are not familiar with the article, and find this material out of context, it is available on-line in the archives of the Washington Post. -ED.

On April 10, 2000, the Washington Post published an article, *Nuclear Cleanup's Fallout*, regarding the Corps of Engineers' management and execution of the Formerly Utilized Sites Remedial Action Program (FUSRAP). The article is a continuation of a recent series of Post articles critical of Corps programs and Corps leadership. Left uncorrected, this most

recent article causes needless concern regarding the protection of public health and safety at the Linde FUSRAP site in Tonawanda, New York and at the Buttonwillow disposal site in California.

While complex technically and legally, the basic issues can be summarized as follows:

-- The article alleged that cleanup standards at the Linde site are not as protective as at other similar sites. In fact, the estimated, post remediation maximum levels at Linde were compared to average, not maximum, levels remaining at other sites. The Linde site will be

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Hanford LLRW Facility Has New Packaging Requirements for Radium

By derek cornette

As of 1 February 2000 the Hanford Low-Level Radioactive Waste Disposal Facility has new packaging requirements for Ra-226. The new requirements, broken out by waste type, are:

1. *Radium Instruments & Articles, small sources and other devices, less than 10 nCi/gram (as packaged).*

a. Should be packaged such that the Radium is essentially evenly distributed within the waste form. No individual item in any waste package may have a specific activity of greater than 100 uCi/gram.

b. Inner 2-R Type container is not required.

c. Drums and metal boxes are typical packaging.

d. Waste will be Class A, Unstable.

2. *Radium needles and sources > 10 nCi/gram but < 100 nCi/gram (as packaged), less than 50 mCi individual activity.*

a. Waste should be packaged as follows:

(1) Sources and/or needles shall be packaged in a USDOT Specification 2R container or other WDOH approved metal 2R-Type container (Schedule 40 pipe w/end caps). All voids must be

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Special points of interest:

- The requirements for the packaging of radium going to the US Ecology disposal site at Hanford have changed—see the facing article for the details.
- Please don't miss the third installment of a four part series on the disposition of unwanted radioactive material.



From the Desk of the Chief

As you read this issue of the Rad Waste News, you will see that we now refer to ourselves as the Operations Support Command (PROV) or OSC (Prov).

Our higher headquarters issued AMC PERMANENT ORDERS 83-5, dtd 23 March 2000, which transitioned the Industrial Operations Command to the Operations Support Command (Prov) effective 31 Mar 2000. This headquarters will be the operational integrating agent for logistics for the Army Materiel Command.

The mission of our command will change but it will not significantly affect the radioactive waste disposal or Executive Agency mission. The only changes I see to our mission are positive. I expect that the Army Contaminated Equipment Retrograde Team will begin to mature with this expanded mission.

With the change in name and mission comes a change in e-mail addresses -- everyone here at the headquarters now has an e-mail address in this form -- last name first initial@osc.army.mil. In addition, our web site also has a new address. It is <http://www.osc.army.mil/dm/dmwwweb/index.dmw>.

Bits and pieces

We welcome Michael Gray as a new health physicist to our Rad Waste Team. Mike formerly served at the Center for Health Promotion and Preventive Medicine, Aberdeen Proving Ground, and at William Beaumont Army Medical Center.

We resolved the permit fee issue with the Rocky Mountain Compact. That compact implemented a fee for processing permits. Our legal team determined that the Army can pay this permit fee. This resolution means that there will be no interruption of Rad Waste disposal services from that compact.

We did not resolve the permit fee issue with the Southwest Compact however. Our appearance before the SW LLRW Commission resulted in a stalemate. Until resolved, the DOD generators cannot export low-level radioactive waste for disposal from those compact states (California, Arizona, North Dakota, and South Dakota). Our legal team is working to find a solution to this stalemate.

The Southwest LLRW Commission recently adopted a policy on the importation of LLRW for disposal into their compact. This policy requires generators to consult with and obtain written approval from:

- The low-level radioactive waste compact or unaffiliated state in which the waste originates;
- The Southwest Low-Level Radioactive Waste Commission; and
- The radiation control agency and waste management agency of the state into which the waste would be imported for disposal.

And finally, we hosted the 10th Annual DOD LLRW Generators Meeting in March 2000. Thank you to the meeting team led by Rich Conley. We will shortly have the meeting minutes and selected presentations on our web site. Another thank you goes to our customers and our commercial service providers who helped make the meeting a success.

Thank you to all who attended our 10th Annual Meeting in Williamsburg. Please stay tuned to our web site for the meeting minutes and copies of selected presentations.

Rosalene Graham



Proposed Rule for Treatment, Transportation, and Disposal of Mixed Waste, 40 CFR 266 by Bill Metcalf

The DOD Executive Agency for disposal of Low-level Radioactive Waste (LLRW) provided comments on the Environmental Protection Agency's (EPA) proposal to provide increased flexibility to facilities that manage low-level mixed waste (LLMW). We agreed that the proposals to allow on-site storage and treatment of these wastes and to exempt LLMW and hazardous NARM waste from RCRA manifest, transportation, and disposal requirements under certain conditions are needed in the industry.

On 19 November 1999, the Environmental Protection Agency (EPA) proposed a rule entitled, "Storage, Treatment, Transportation, and Disposal of Mixed Waste", 64 Federal Register 63464. In this rule, EPA proposed to provide increased flexibility to facilities that manage LLMW or naturally occurring and/or accelerator-produced radioactive material (NARM) mixed with hazardous waste.

EPA is proposing to allow LLMW and NARM mixed with hazardous waste to be exempt from RCRA regulation when managed per NRC requirements. Basically, EPA compared radioactive waste management requirements to the RCRA requirements for treatment, storage, transportation, and disposal of hazardous waste. They determined that protection of human health and the environment would not be affected if managed under the NRC low-level waste management practices.

This proposed rule applies to mixed waste generators having NRC/Agreement State licenses. It will allow generators to treat and store certain mixed wastes on-site without a RCRA permit. If generators can meet Land Disposal Restrictions (LDR) and other conditions, they can dispose of their wastes at Low-level Radioactive Waste Disposal Facilities (LLRWDF) that currently are unable to accept mixed waste because of the RCRA hazardous waste component.

This proposed rule is applicable to generators within the Department of Defense (DoD) community such as:

- Hospitals where radioactive materials are used in various processes and are mixed with hazardous wastes;

- Research facilities using scintillation cocktails generating waste that contains both radioactive waste and hazardous waste components;
- Remediation/excavation sites where soil or debris contain both radioactive waste and hazardous waste from past activities; and
- Wastes resulting from spills or accidents involving radioactive commodities that are mixed with hazardous waste either as a direct result of the accident or via decontamination activities.

For now, keep in mind that this is only a proposed rule. It has not been approved. Waste managers should continue to manage their mixed waste in accordance with applicable EPA and NRC regulations.

For further information or questions on this subject contact Mr. Bill Metcalf, AMSOS-SF, DSN 793-2248 or email metcalfw@osc.army.mil.

FINALLY! RELIEF FROM THE "LAW" By Paul Grooms

The Operations Support Command (Prov) recently received amendment #24 to their NRC license BML 12-00722-07 for promethium (Pm147) in the front sight of the Light Anti-tank Weapon (LAW). The amendment is a welcome change and modifies the following license requirements:

- a. LAW storage structures no longer require posting as radiological storage areas.
- b. LAW storage structures no longer require annual radiation surveys.
- c. Pm147 LAW sights no longer require leak testing.

The OSC also submitted a package to the NRC to terminate the LAW license. We anticipate this process to take some time so we aren't out of the ballgame yet. You are still required to keep an inventory of your LAW items and provide awareness training. You are also required to remove the Pm147 sights from the expended launcher after firing and turn into your radiation safety officer (RSO) for disposal as radioactive waste. You can get a copy of amendment #24 on the OSC web site at <http://www.osc.army.mil/dm/dmwwweb/indexdmw.htm> under the License Management heading or call the OSC at (309) 782-2976/2969 or DSN 793-2976/2969.



PREPARATION OF EXCESSED MATERIALS FOR SHIPMENT

By Kelly Crooks

This is the third in the series for guidelines to follow in collecting and consolidating excess radioactive material in preparation for removal off-post from Army sites. The series will be part of the DA PAM11-9, Radiation Safety Program.

DISPOSITION REQUEST

The installation Radiation Safety Officer (RSO) will request disposition of excessed materials, by memorandum, fax or e-mail, to the Safety/Rad Waste Team at :

U.S. Army Operations Support Command (Prov)
ATTN: AMSOS-SF
1 Rock Island Arsenal
Rock Island, IL 61299-6000
DSN 793-0338 Comm (309) 782-0338
Fax DSN 793-2988 E-mail amsos-sf@osc.army.mil

Army National Guard units will send their requests to the Communications-Electronics Command Safety Office at:

U.S. Army Communications-Electronics Command
Directorate of Safety Risk Management
Radiological Engineering Division
ATTN: AMSEL-SF
Fort Monmouth, NJ 07703-5024

The installation RSO will determine when to make the request. In general, accumulate materials until you are 6 months from capacity or, for small generators, enough to fill a 55-gallon drum. Do not request disposition for very small quantities, e.g. 5 tritium compasses, unless circumstances warrant it.

SHIPMENT PREPARATION

Use metal drums as shipping containers. Get approval for other types of containers from the Safety/Rad Waste Team, DSN 793-0338. While any sealed metal drum qualifies as an excepted package, the following national stock numbers also are 7A Type A containers:

55 Gallon

8110-01-454-1950

8110-01-454-2148

8110-01-454-1952

8110-01-454-2151

30 Gallon

8110-01-454-1841

8110-01-454-1827

85 Gallon

8110-01-454-1956

Update and double-check the inventory of materials. The inventory should include:

Nomenclature	Activity/Item (mCi/MBq)
NSN	Total Activity (mCi/MBq)
Quantity	Weight of Container (if packed)
Radionuclide	Volume of Container (if packed)

Ensure the inventory:

- 1) Does not have free standing liquids.
- 2) Does not have hazardous materials e.g. lead. Identify mixed wastes.
- 3) Does not have two or more substances which may chemically react.
- 4) Has sharps identified and separated from other materials. Mark packages containing sharps as such and certify the package as non-infectious.

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filled with structural concrete or cement. The 2R or WDOH approved 2R-type should then be sealed. If the sources and/or needles are contained in a lead pig, this step may be omitted, and go to step (3).

(2) If a Specification 2R container or other WDOH 2R-type container is used it must be centered and stabilized with structural concrete (2500 psi min.) in a Schedule 40 PVC pipe, capped and sealed on each end.

(3) The PVC pipe or lead pig is geometrically centered and stabilized with structural concrete (2500 psi min.) in a 5, or 10 gallon drum. (Note: a minimum of 4 inches of concrete must surround this inner drum in the final step of the encapsulation)

(4) Fill a 30 or 55-gallon USDOT Specification 7A, Type A drum partially full of structural concrete. Place the 5 or 10 gallon drum into the 30 or 55-gallon drum so that it is geometrically centered. (Note: a minimum of 4 inches of concrete must surround this inner drum)

(5) Insert a minimum of three pieces of 0.25-inch diameter rebar steel (cut approximately 6 inches shorter than the length of the outer drum) equally spaced around the annulus between the inner and outer drum. Tap out any air voids.

(6) Fill the rest of the 30 or 55 gallon, DOT 7A, Type A container at least 95% full with structural concrete (2500 psi min.). Tap out any air voids. (Note: ensure inner 5 or 10 gallon drum remains centered).

(7) Concrete must cure for at least 28 days prior to shipment and the temperature must be maintained

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Derived CONCENTRATION GUIDELINE LEVELS and Surrogates

By Dave Horton

This article will introduce you to some of the terminology and concepts used when performing remediation projects.

In December 1997 the Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC) published the final version of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), NUREG-1575.

This manual is a multi-agency consensus document that was developed collaboratively by four Federal agencies having control and authority over radioactive materials: Department of Defense (DOD), Department of Energy (DOE), Environmental Protection Agency (EPA), and Nuclear Regulatory Commission (NRC).

The manual provides information on planning, conducting, evaluating and documenting radiological surveys to demonstrate compliance with dose or risk based standards. When we plan the remediation of a site contaminated with radioactive material we must meet the appropriate dose or risk based standards. These standards come from the EPA and or the NRC. The process described in MARSSIM does not directly show compliance with these standards but rather shows compliance with derived concentration guideline levels (DCGLs).

An example of a risk-based standard is a less than 10^{-6} (or one in a million) increased risk of mortality. An example of a dose-based standard is a dose of less than 25 mrem/yr (see 10 CFR 20.1402). These standards are not directly measurable when doing a remediation.

When we determine the appropriate dose or risk based standard, we convert the standard to something we can measure. We convert to a DCGL. We do this conversion by considering the particular radionuclide(s) we are dealing with and by modeling their behavior. The model takes into account the expected land use and the different pathways of exposure. Often we do a worst case estimate assuming what I call the resident farmer scenario. In this scenario, someone lives on the land, grows their food on the land and gets their water from the site.

This conversion to a DCGL gives us a standard that we can measure. For example, the DCGL may be 5 pCi/g in soil for a particular radionuclide. Sometimes directly measuring the concentration of a particular radionuclide can be difficult and we determine the concentration by measuring a surrogate instead.

We may know the ratio of the concentration of some other easily measured radionuclide to the concentration of the radionuclide in our DCGL. We may know this ratio through process knowledge of how we created the contamination or through knowledge of how the radionuclide decays. If we

can establish this ratio, then we can measure the level of our surrogate and show compliance with our DCGL by applying the ratio.

Another example of using a surrogate is measuring surface contamination that includes both alpha and beta contamination. Alpha contamination may be more difficult to measure accurately due to the highly variable level of alpha attenuation due to rough, porous or dusty surfaces. If we can establish a ratio between the alpha and beta contamination, for example due to our knowledge of the decay chain, we can show compliance with the alpha requirement using the beta measurement as a surrogate.

If you have any questions on this subject, you can contact David Horton at (309) 782-1759, DSN 793-1759, or HortonD@osc.army.mil.

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decontaminated to levels at, or below, promulgated US Nuclear Regulatory Commission and US Environmental Protection Agency standards for protecting public health and safety.

-- The article alleged that the Corps was taking an unprecedented approach to nuclear cleanup and setting new radiological standards. In fact, the Corps executes each cleanup in accordance with the Comprehensive Environmental Response, Compensation and Liability Act and the National Contingency Plan.

-- The article alleged that Linde Building 30 materials were disposed in an unlicensed facility at Buttonwillow. In fact, the materials went to a facility with a valid permit to accept them. This facility routinely accepts petroleum exploration, production and refinery wastes that are contaminated with similar radionuclides at equal or higher concentrations.

-- The article alleged that the contractor deliberately disregarded certain samples of the Building 30 materials. In fact, this statement is false; all samples were used to determine whether the disposal facility could accept the material.

Since the publication of the Post article, the Corps has set out to correct the record. For example, the Chief of Engineers submitted a Letter to the Editor of the Post on April 11, 2000; the Chief of Public Affairs has written the Post Ombudsman requesting a correction; and the Buffalo District Commander has met personally with Praxair (Linde) workers to reassure them about their personal safety and with local elected officials to keep them informed. Additionally, the Buffalo News ran a positive editorial regarding the Corps' local work under FUSRAP.

The public can be assured that the Corps is conducting FUSRAP in a manner protective of public health and safety and at considerable savings to the taxpayer.



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(8) between 40°F to 110°F during the curing period.

b. Waste will be Class C, Stable. The final average radium concentration must be < 100 nCi/gm based on the net package weight.

c. Requires a non-homogeneous Radium packaging approval to be issued by the State of Washington.

NOTE: The use of DOT Specification 2-R Type (see 49 CFR

178.360) containers is not required; a WDOH approved 2-R Type container is sufficient.

For Radium or Ra-Be sources larger than 45 mCi, contact US Ecology for specific guidance prior to packaging.

3. Radium source/needle > 10 nCi/gram but < 100 nCi/gram (as packaged), greater than 50 but less than 100 mCi individual activity.

a. Waste should be packaged as follows:

(1) Source and/or needle shall be packaged in a US DOT Specification 2R container or other WDOH approved metal 2R-Type container (Schedule 40 pipe w/ end caps). All voids must be filled with structural concrete or cement. The 2R or WDOH approved 2R-type should then be sealed. If the source/needle is contained in a lead pig, this step may be omitted, and go to the third bullet .

(2) If a Specification 2R container or other WDOH 2R-type container is used it must be centered and stabilized with structural concrete (2500 psi min.) in a Schedule 40 PVC pipe, capped and sealed on each end.

(3) The PVC pipe or lead pig is geometrically centered and stabilized with structural concrete (2500 psi min.) in a 5, 10, 15, 20 or 30 gallon drum.

(4) Fill a 110-gallon USDOT Specification 7A, Type A drum partially full of structural concrete (2500 psi min.). Place the 5, 10, 15, 20 or 30 gallon drum into the 110-gallon drum so that it is geometrically centered. (Note: a minimum of 4 inches of concrete must surround the inner drum in the final step of the encapsulation)

(5) Insert a minimum of three pieces of 0.25-inch diameter rebar steel (cut approximately 6 inches shorter than the length of the outer drum) equally spaced around the annulus between the inner and outer drum. Tap out any air voids.

(6) Fill the rest of the 110 gallon, DOT 7A, Type A container at least 95% full with structural concrete (2500 psi min.). Tap out any air voids. (Note: ensure inner 5, 10, 15, 20 or 30 gallon drum remains centered).

(7) Concrete must cure for at least 28 days prior to shipment and the temperature must be maintained between 40°F to 110°F during the curing period.

(b) Waste will be Class C, Stable. The final average radium concentration must be < 100 nCi/gm based on the net package weight.

(c) Requires a non-homogeneous Radium packaging approval to be issued by the State of Washington.

For a Radium or Ra-Be source larger than 90 mCi, contact US Ecology for specific guidance prior to packaging.

4. Consumer Products

a. If all requirements of License Condition 38 are met:

(1) No inner 2-R is required.

(2) Waste will be Class A, Unstable, regardless of actual specific activity.

5. *Radium needles and sources (< 4.5 mCi total) and < 10 nCi/gram (as packaged).*

a. Inner 2-R Type container not required, but waste must be geometrically centered and stabilized in structural concrete (2500 psi min.). A 2-R Type container may be used, if desired.

b. Requires a non-homogeneous Radium packaging approval variance to be issued by the State of Washington.

c. Waste will be Class A, Stable. The final average radium concentration must be < 10 nCi/gm based on the net package weight.

d. Concrete must cure for at least 28 days prior to shipment and the temperature must be maintained between 40°F to 110°F during the curing period.

Packaging and disposal approvals that are still valid will be honored and the old criteria maybe honored if the material is already packaged and you do not have valid approvals. If you have any questions about the changes contact the DODEA or: Darwin Westlund, Manager, NARM Services, 509-946-4945, 509-946-5495 (fax); dwestlun@americanecology.com; or Chuck White, NARM Admin, 509-946-4945, 509-946-5495 (fax), cwhite@americanecology.com.



OSC TO BEGIN REMOVAL OF CONTAMINATED EQUIPMENT FROM STARMET

By mike styvaer t

The shrinking requirement for new depleted uranium penetrators for DOD ammunition has forced ammunition system contractors to select one producer for future requirements. The Starmet facility in Concord, MA completed their last DU penetrator production lot in the fall of 1999. The Army owns several pieces of DU contaminated manufacturing equipment at the Starmet facility. Starmet has requested the Army remove its equipment and contamination so they can use the

space for other production needs. As a first step, the OSC awarded a contract to New World Technology to remove, disconnect, package, transport and dispose of approximately 750,000 lbs of Army-owned manufacturing equipment.



SERVICE AND AGENCY POINTS OF CONTACT

Air Force:	CAPT Maridee Cornell (210) 536-3489 AFIERA/SDRH (AFRMWO) Brooks AFB, Texas 78235	USACE:	Mr. Richard Wright, Jr. (202) 761-8565 Corps of Engineers CESO-I, 20 Massachusetts Ave, NW Washington, DC 20314
Navy:	Mrs. Laurie Lowman (757) 887-4692, % Naval Sea Systems Command Detachment, Radiological Affairs Support Office Yorktown, VA 23691-0260	DLA:	Mr. Mike Coogen, DLA-OWP (703) 767-6231/6300 Defense Logistics Agency Ft. Belvoir, VA 22060-6221

Army: You can reach us at HQ, OSC, AMSOS-SF, 1 Rock Island Arsenal, IL 61299-6000 or via EMAIL at: conleyr@osc.army.mil - 309-782-0171 or DSN 793-0171
or the WORLD WIDE WEB at <http://www.osc.army.mil/dm/DMWWEB/indexdmw.htm>

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Richard D. Conley, Editor

DEPARTMENT OF ARMY

AMSOS-SF
Headquarters, Industrial Operations Command
1 Rock Island Arsenal
Rock Island, IL 61299-6000

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